



**ICF international / Laboratory Data Consultants**

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**MEMORANDUM**

TO: Chris Lichens, Remedial Project Manager  
 Site Cleanup Section 4, SFD-7-4

THROUGH: Rose Fong, ESAT Task Order Manager (TOM)  
 Quality Assurance (QA) Program, MTS-3

FROM: Doug Lindelof, Data Review Task Manager  
 Region 9 Environmental Services Assistance Team (ESAT)

ESAT Contract No.: EP-W-06-041  
 Technical Direction Form No.: 00105132

DATE: May 9, 2008

SUBJECT: Review of Analytical Data, Tier 3

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	Omega Chem OU2
Site Account No.:	09 BC QB02
CERCLIS ID NO.:	CAD042245001
Case No.:	37203
SDG No.:	Y3WK7
Laboratory:	Mitkem Laboratories (MITKEM)
Analysis:	Trace Volatiles
Samples:	20 Groundwater Samples (see Case Summary)
Collection Date:	February 28 and 29, 2008 and March 3, 2008
Reviewer:	Kendra DeSantolo, ESAT/Laboratory Data Consultants

This report has been reviewed by the EPA TOM for the ESAT contract, whose signature appears above.

If there are any questions, please contact Rose Fong (QA Program/EPA) at (415) 972-3812.

Attachment

cc: Jennie Han-Liu, CLP PO USEPA Region 1  
 Steve Remaley, CLP PO USEPA Region 9

CLP PO:  Attention       Action

SAMPLING ISSUES:  Yes       No

00105132-9398/37203/Y3WK7-TV

## Data Validation Report - Tier 3

Case No.: 37203  
SDG No.: Y3WK7  
Site: Omega Chem OU2  
Laboratory: Mitkem Laboratories  
Reviewer: Kendra DeSantolo, ESAT/LDC  
Date: May 9, 2008

### I. CASE SUMMARY

#### Sample Information

Samples: Y3WK7 through Y3WM6  
Concentration and Matrix: Low/Medium Concentration Water  
Analysis: Trace Volatiles  
SOW: SOM01.2  
Collection Date: February 28 and 29, 2008 and March 3, 2008  
Sample Receipt Date: February 29, 2008 and March 1 and 4, 2008  
Extraction Date: Not Applicable  
Analysis Date: March 5, 6, 7, and 10, 2008

#### Field QC

Field Blanks (FB): Y3WM6  
Equipment Blanks (EB): Not provided  
Trip Blank (TB): Y3WL7  
Background Samples (BG): Not provided  
Field Duplicates (D1): Y3WL2 and Y3WL3  
Field Duplicates (D2): Y3WM4 and Y3WM5

#### Laboratory QC

##### Method Blanks & Associated Samples:

VBLK5T: Y3WK7, Y3WK8, Y3WL1 through Y3WL3, Y3WL5, and Y3WL6  
VBLK5U: Y3WK7DL, Y3WK8DL, Y3WK9, Y3WL0, Y3WL1DL, Y3WL2DL, Y3WL3DL, Y3WL4, Y3WL5DL, Y3WL6DL, and Y3WL7  
VBLK5W: Y3WL8, Y3WL9, Y3WM0, Y3WM1, Y3WM3, Y3WM3MS, Y3WM3MSD, Y3WM4, Y3WM5, and Y3WM6  
VBLK5X: Y3WM2  
VBLKB5: Y3WM4DL and Y3WM5DL  
VBLKC5: storage blank VHBLKC5

#### Tables

- 1A: Analytical Results with Qualifications
- 1B: Data Qualifier Definitions for Organic Data Review
- 2: Calibration Summary

#### CLP PO Action

None.

### CLP PO Attention

1. Detected results for some analytes are qualified as nondetected and estimated (U,J) due to method blank and field blank contamination (see Comment B).
2. Results for some analytes are qualified as estimated (J) due to calibration problems (see Comments C and D).
3. Results for some analytes are qualified as estimated (J) due to deuterated monitoring compound (DMC) recovery problems (see Comment E).
4. Detected result for trans-1,2-dichloroethene in sample Y3WK7 is qualified as estimated (J) due to concentration exceeding calibration range (see Comment F).

### Sampling Issues

Detected results for chloroform in samples Y3WM3, Y3WM4, and Y3WM5 are qualified as nondetected and estimated (U,J) due to field blank contamination (see Comment B).

### Additional Comments

Other than a laboratory artifact (approximate retention time of 7.1 minutes), tentatively identified compounds (TICs) were found in samples Y3WK8 and Y3WL9 (see attached Form 1Js).

This report was prepared in accordance with the following documents:

- ESAT Region 9 Standard Operating Procedure 901, *Guidelines for Data Review of Contract Laboratory Program Analytical Services Volatile and Semivolatile Data Packages*;
- USEPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration, SOM01.1, May 2005;
- *Modifications Updating SOM01.1 to SOM01.2*, Amended April 11, 2007; and
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, July 2007.

## **II. VALIDATION SUMMARY**

The data were evaluated based on the following parameters:

	<u>Parameter</u>	<u>Acceptable</u>	<u>Comment</u>
1.	Holding Time/Preservation	Yes	

2.	GC/MS Tune/GC Performance	Yes	
3.	Initial Calibration	No	C
4.	Continuing Calibration Verification	No	C, D
5.	Laboratory Blanks	No	B
6.	Field Blanks	Yes	
7.	Deuterated Monitoring Compounds	No	E
8.	Matrix Spike/Matrix Spike Duplicate	No	G
9.	Laboratory Control Sample/Duplicate	N/A	
10.	Internal Standards	Yes	
11.	Compound Identification	Yes	
12.	Compound Quantitation	Yes	A, F, H
13.	System Performance	Yes	
14.	Field Duplicate Sample Analysis	Yes	

N/A = Not Applicable

### III. VALIDITY AND COMMENTS

- A. The following results, denoted with an "L" qualifier, are estimated and flagged "J" in Table 1A.
- All detected results below the contract required quantitation limits

*Results below the contract required quantitation limits (CRQLs) are considered to be qualitatively acceptable, but quantitatively unreliable, due to the uncertainty in analytical precision near the limit of detection.*

- B. The following results are qualified as nondetected and estimated due to method blank and field blank contamination and are flagged "U,J" in Table 1A.
- Methylene chloride in field blank Y3WM6
  - Chloroform in samples Y3WM3 through Y3WM5

Methylene chloride was found in method blanks VBLK5W and VBLK5X and chloroform was found in field blank Y3WM6 (see Table 1A for concentrations). Results for the samples listed above are considered nondetected and estimated (U,J) and quantitation limits have been raised according to blank qualification rules presented below.

No positive results are reported unless the concentration of the compound in the sample exceeds 10 times the amount in any associated blank for common laboratory contaminants or 5 times the amount for other compounds. If the sample result is greater than the CRQL, the quantitation limit is raised to the sample result and reported as nondetected. If the sample result is less than the CRQL, the result is reported as nondetected at the CRQL.

*A laboratory method blank is laboratory reagent water or baked sand analyzed with all reagents, deuterated monitoring compounds, and internal standards and carried*

*through the same sample preparation and analytical procedures as the field samples. The laboratory method blank is used to determine the level of contamination introduced by the laboratory during analysis.*

*A field blank is clean water prepared as a sample in the field by the sampler and shipped to the laboratory with the samples. A field blank is intended to detect contaminants that may have been introduced in the field, although any laboratory introduced contamination will be present. Contaminants that are found in the field blank which are absent in the laboratory method blank could be indicative of a field QC problem, a deficiency in the bottle preparation procedure, a difference in preparation of the laboratory and field blanks, or other indeterminate error.*

- C. Results for the following analytes are qualified as estimated due to low RRFs in initial calibration and continuing calibration verifications (CCVs) and are flagged "J" in Table 1A.

- Acetone and 1,2-dibromo-3-chloropropane in all samples, all method blanks, and storage blank VHBLKC5
- 2-Butanone in samples Y3WK9, Y3WL0, Y3WL4, and Y3WL7 through Y3WM6; method blanks VBLK5U, VBLK5W, VBLK5X, VBLKB5, and VBLKC5; and storage blank VHBLKC5

An average RRF of 0.026 was reported for acetone in the initial calibration. RRFs were below the 0.05 validation criterion for acetone, 2-butanone, and 1,2-dibromo-3-chloropropane in CCVs (see Table 2).

Detected results for the analytes listed above may be biased low and should be considered as the minimum concentrations at which these analytes are present in the samples. Where results are nondetected, false negatives may exist.

DMCs 2-butanone-d5 and 2-hexanone-d5 also had RRFs below the 0.05 validation criterion in the initial calibration and CCVs (see Table 2). Quantitation of the analytes associated with these DMCs may have been affected by low RRFs (see attached Table 9 from the Functional Guidelines).

*The RRF evaluates instrument sensitivity and is used in the quantitation of target analytes.*

- D. Results for the following analyte are qualified as estimated due to large percent difference (%D) in the CCV and are flagged "J" in Table 1A.

- 1,1-Dichloroethene in samples Y3WK7, Y3WK8, Y3WL1 through Y3WL3, Y3WL5, and Y3WL6 and method blank VBLK5T

The %D exceeded the  $\pm 30.0\%$  validation criterion for 1,1-dichloroethene in the 03/05/08 CCV (see Table 2).

The DMC 1,1-dichloroethene-d2 also had %Ds that exceeded the  $\pm 30.0\%$  validation criterion in CCVs. Quantitation of the analytes associated with this DMC may have been affected by high %Ds (see attached Table 9 from the Functional Guidelines).

*The continuing calibration checks the instrument performance daily and produces the relative response factors (RRFs) for target analytes that are used for quantitation.*

- E. Results for the following analytes are qualified as estimated due to DMC recoveries outside QC limits and are flagged "J" in Table 1A.

{Chloroethane-d5}

- Dichlorodifluoromethane, chloromethane, bromomethane, chloroethane, and carbon disulfide in samples Y3WK7, Y3WL2, and Y3WL9

{1,1-Dichloroethene-d2}

- trans-1,2-Dichloroethene and cis-1,2-dichloroethene in samples Y3WK7, Y3WK8, Y3WL1, and Y3WL2
- cis-1,2-Dichloroethene in sample Y3WL3
- 1,1-Dichloroethene and cis-1,2-dichloroethene in samples Y3WL6, Y3WM4, and Y3WM5

DMC recoveries outside QC limits are shown below.

<u>Sample</u>	<u>DMC</u>	<u>% Recovery</u>	<u>QC Limit</u>
Y3WK7	Chloroethane-d5	71	71-131
Y3WL2	Chloroethane-d5	67	71-131
Y3WL9	Chloroethane-d5	69	71-131
Y3WK7	1,1-Dichloroethene-d2	2302	55-104
Y3WK8	1,1-Dichloroethene-d2	1017	55-104
Y3WL1	1,1-Dichloroethene-d2	278	55-104
Y3WL2	1,1-Dichloroethene-d2	217	55-104
Y3WL3	1,1-Dichloroethene-d2	219	55-104
Y3WL6	1,1-Dichloroethene-d2	166	55-104
Y3WM3MS	1,1-Dichloroethene-d2	139	55-104
Y3WM3MSD	1,1-Dichloroethene-d2	144	55-104
Y3WM4	1,1-Dichloroethene-d2	182	55-104
Y3WM5	1,1-Dichloroethene-d2	210	55-104
Y3WK7	Chloroform-d	170	78-121
Y3WK8	Chloroform-d	125	78-121

Detected results for affected analytes where DMC recoveries fell below QC limits may be biased low; where results are nondetected, false negatives may exist.

Detected results for affected analytes where DMC recoveries exceeded QC limits may be biased high. For DMC recoveries that exceeded QC limits, only detected results for associated analytes are qualified. The very high recoveries for DMC 1,1-dichloroethene-d2 in samples Y3WK7 and Y3WK8 are due to high concentrations

of 1,1-dichloroethene present in samples. Recoveries for the DMC chloroform-d exceeded QC limits but detected results for chloroform were reported from the dilutions. The samples were not reanalyzed.

*Surrogates (e.g., deuterated monitoring compounds (DMCs)) are organic compounds which are similar to the target analytes in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples. All samples are spiked with DMCs prior to purging. DMCs provide information about both the laboratory performance on individual samples and the possible effects of the sample matrix on the analytical results.*

- F. Detected result for the following analyte is qualified as estimated due to concentration exceeding the calibration range and is flagged "J" in Table 1A.
- trans-1,2-Dichloroethene in sample Y3WK7

The concentration of trans-1,2-dichloroethene in sample Y3WK7 was 56  $\mu\text{g}/\text{L}$ . This value exceeds the 0.5-20  $\mu\text{g}/\text{L}$  calibration range. The laboratory reanalyzed sample Y3WK7 at a 80-fold dilution but trans-1,2-dichloroethene was diluted out (40U).

The result reported in Table 1A for trans-1,2-dichloroethene in sample Y3WK7 is from the undiluted analysis. This concentration is considered to be qualitatively acceptable but quantitatively questionable and should be considered as the minimum concentration at which the analyte is present in sample.

- G. The matrix spike/matrix spike duplicate relative percent difference (RPD) for benzene (13%) in QC samples Y3WM3MS and Y3WM3MSD did not meet the criterion for precision ( $\leq 11\%$ ) specified in the SOW.

Results obtained may indicate poor laboratory technique or matrix effects which may interfere with analysis. The effect on data quality is not known.

*Matrix spike sample analysis provides information about the effect of the sample matrix on sample preparation and measurement.*

- H. Samples Y3WK7 and Y3WK8 were reanalyzed at 80-fold and 20-fold dilutions, respectively, due to high levels of trichlorofluoromethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoromethane, chloroform, trichloroethene, and tetrachloroethene that exceeded the calibration range. Results for these analytes in samples Y3WK7 and Y3WK8 are reported from the diluted analyses in Table 1A; results for other analytes are reported from the undiluted analyses.

Sample Y3WL1 was reanalyzed at a 10-fold dilution due to high levels of trichlorofluoromethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoromethane, trichloroethene, and tetrachloroethene that exceeded the calibration range. Results for these analytes in sample Y3WL1 are reported from the diluted analysis in Table 1A; results for other analytes are reported from the undiluted analysis.

Samples Y3WL2 and Y3WL3 were reanalyzed at 10-fold dilutions due to high levels of 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoromethane, trichloroethene, and tetrachloroethene that exceeded the calibration range. Results for these analytes in samples Y3WL2 and Y3WL3 are reported from the diluted analyses in Table 1A; results for other analytes are reported from the undiluted analyses.

Sample Y3WL5 was reanalyzed at a 4-fold dilution due to a high level of trichloroethene that exceeded the calibration range. The result for trichloroethene in sample Y3WL5 is reported from the diluted analysis in Table 1A; results for other analytes are reported from the undiluted analysis.

Samples Y3WL6, Y3WM4, and Y3WM5 were reanalyzed at 8-, 4-, and 4-fold dilutions, respectively, due to high levels of trichloroethene and tetrachloroethene that exceeded the calibration range. Results for these analytes in samples Y3WL6, Y3WM4, and Y3WM5 are reported from the diluted analyses in Table 1A; results for other analytes are reported from the undiluted analyses.

00105132-9398/37203/Y3WK7-TV

Case No. : 37203

SDG No. : Y3WK7

Site : OMEGA CHEM OU2

Lab : MITKEM LABORATORIES

Reviewer : Kendra DeSantolo, ESAT/LDC

Date : 05/09/08

## ANALYTICAL RESULTS

**Table 1A**

**QUALIFIED DATA**

**Analysis Type :**

## Trace Level Water Samples for Trace Volatiles

Case No. : 37203

SDG No. : Y3WK7

## ANALYTICAL RESULTS

Table 1A

Site : OMEGA CHEM OU2  
 Lab : MITKEM LABORATORIES  
 Reviewer : Kendra DeSantolo, ESAT/LDC  
 Date : 05/09/08

QUALIFIED DATA  
Concentration in ug/L

## Analysis Type :

Trace Level Water Samples  
for Trace Volatiles

Station Location	41			42			43			44			45			46		
Sample ID	Y3WK7			Y3WK8			Y3WK9			Y3WL0			Y3WL1			Y3WL2	D1	
Collection Date	2/28/2008			2/29/2008			2/29/2008			2/29/2008			2/29/2008			2/29/2008		
Dilution Factor	1.0			1.0			1.0			1.0			1.0			1.0		
Trace Volatiles	Result	Val	Com															
1,2-Dichloropropane	0.50U																	
Bromodichloromethane	0.50U																	
cis-1,3-Dichloropropene	0.50U																	
4-Methyl-2-pentanone	5.0U																	
Toluene	0.50U																	
trans-1,3-Dichloropropene	0.50U																	
1,1,2-Trichloroethane	0.80			0.21L	J	A	0.50U			0.50U			0.50U			0.50U		
Tetrachloroethene	940	H		280		H	0.50U			2.0			58	H		100		H
2-Hexanone	5.0U																	
Dibromochloromethane	0.50U																	
1,2-Dibromoethane	0.50U																	
Chlorobenzene	0.50U																	
Ethylbenzene	0.50U																	
o-Xylene	0.50U																	
m,p-Xylene	0.50U																	
Styrene	0.50U																	
Bromoform	0.50U																	
Isopropylbenzene	0.50U																	
1,1,2,2-Tetrachloroethane	0.50U																	
1,3-Dichlorobenzene	0.50U																	
1,4-Dichlorobenzene	0.50U																	
1,2-Dichlorobenzene	0.50U																	
1,2-Dibromo-3-chloropropane	0.50U	J	C															
1,2,4-Trichlorobenzene	0.50U																	
1,2,3-Trichlorobenzene	0.50U																	

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

CRQL - Contract Required Quantitation Limit

N/A - Not Applicable

NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

Case No. : 37203

SDG No. : Y3WK7

Site : OMEGA CHEM Q12

Lab : MITKEM LABORATORIES

Reviewer : Kendra DeSantolo, ESAT/IDC

Date : 05/09/08

## ANALYTICAL RESULTS

Table 1A

QUALIFIED DATA

### Concentration in $\mu\text{g/L}$

**Analysis Type :**

## Trace Level Water Samples for Trace Volatiles

Station Location :	47	48		49		50		51		52					
Sample ID :	Y3WL3	D1		Y3WL4	Y3WL5		Y3WL6	Y3WL7		Y3WL8					
Collection Date :	2/29/2008			2/29/2008	2/29/2008		2/29/2008	2/29/2008		3/3/2008					
Dilution Factor :	1.0			1.0	1.0		1.0	1.0		1.0					
Trace Volatiles	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Dichlorodifluoromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Vinyl chloride	0.50U			0.50U			0.50U			0.50U			0.50U		
Bromomethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Trichlorofluoromethane	7.7			0.50U			6.2			0.72			0.50U		
1,1-Dichloroethene	24	J	DH	0.50U			5.5	J	D	17	J	DE	0.50U		
1,1,2-Trichloro-1,2,2-trifluoroethane	31		H	0.50U			18			2.6			0.50U		
Acetone	5.0U	J	C	5.0U	J	C	5.0U	J	C	5.0U	J	C	5.0U	J	C
Carbon disulfide	0.50U			0.50U			0.50U			0.50U			0.50U		
Methyl acetate	0.50U			0.50U			0.50U			0.50U			0.50U		
Methylene chloride	0.50U			0.50U			0.50U			0.50U			0.50U		
trans-1,2-Dichloroethene	0.50U			0.50U			0.50U			0.50U			0.50U		
Methyl tert-butyl ether	0.30L	J	A	0.50U			0.50U			0.23L	J	A	0.50U		
1,1-Dichloroethane	1.2			0.50U			0.50U			4.0			0.50U		
cis-1,2-Dichloroethene	4.3	J	E	0.50U			0.51			13	J	E	0.50U		
2-Butanone	5.0U			5.0U	J	C	5.0U			5.0U			5.0U	J	C
Bromochloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chloroform	8.5			0.50U			0.63			0.58			0.50U		
1,1,1-Trichloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Cyclohexane	0.50U			0.50U			0.50U			0.50U			0.50U		
Carbon tetrachloride	0.50U			0.50U			0.50U			0.50U			0.50U		
Benzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dichloroethane	0.97			0.50U			0.50U			0.50U			0.50U		
Trichloroethene	45		H	0.91			29	H		20	H		0.50U		
Methylcyclohexane	0.50U			0.50U			0.50U			0.50U			0.50U		

Case No. : 37203

SDG No. : Y3WK7

## ANALYTICAL RESULTS

Table 1A

Site : OMEGA CHEM OU2  
 Lab : MITKEM LABORATORIES  
 Reviewer : Kendra DeSantolo, ESAT/LDC  
 Date : 05/09/08

QUALIFIED DATA  
Concentration in ug/L

## Analysis Type :

Trace Level Water Samples  
for Trace Volatiles

Station Location :	47	Sample ID :	Y3WL3	Collection Date :	2/29/2008	Dilution Factor :	1.0	48	Y3WL4	49	Y3WL5	50	Y3WL6	51	Y3WL7	52	Y3WL8	
Trace Volatiles	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
1,2-Dichloropropane	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
Bromodichloromethane	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
cis-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
4-Methyl-2-pentanone	5.0U			5.0U			5.0U			5.0U			5.0U			5.0U		
Toluene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
trans-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,1,2-Trichloroethane	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
Tetrachloroethene	100	H		0.20L	J	A	11			81	H		0.50U			2.2		
2-Hexanone	5.0U			5.0U			5.0U			5.0U			5.0U			5.0U		
Dibromochloromethane	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dibromoethane	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
Chlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
Ethylbenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
o-Xylene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
m,p-Xylene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
Styrene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
Bromoform	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
Isopropylbenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,1,2,2-Tetrachloroethane	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,3-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,4-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dibromo-3-chloropropane	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50U	J	C
1,2,4-Trichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		
1,2,3-Trichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U			0.50U		

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

CRQL - Contract Required Quantitation Limit

N/A - Not Applicable

NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

Case No. : 37203

SDG No. : Y3WK7

Site : OMEGA CHEM QU2

Lab : MITKEM LABORATORIES

Reviewer : Kendra DeSantolo, ESAT/IDC

Date : 05/09/08

#### **ANALYTICAL RESULTS**

Table 1A

## **QUALIFIED DATA**

### Concentration in $\mu\text{g/L}$

**Analysis Type :**

## Trace Level Water Samples for Trace Volatiles

Case No. : 37203

SDG No. : Y3WK7

Site : OMEGA CHEM OU2

Lab : MITKEM LABORATORIES

Reviewer : Kendra DeSantolo, ESAT/LDC

Date : 05/09/08

## ANALYTICAL RESULTS

Table 1A

## QUALIFIED DATA

Concentration in ug/L

## Analysis Type :

Trace Level Water Samples  
for Trace Volatiles

Station Location :	53		54		55		56		57		58				
Sample ID :	Y3WL9		Y3WM0		Y3WM1		Y3WM2		Y3WM3		Y3WM4		D2		
Collection Date :	3/3/2008		3/3/2008		3/3/2008		3/3/2008		3/3/2008		3/3/2008				
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0				
Trace Volatiles	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
1,2-Dichloropropane	0.50U			0.50U			0.50U			0.50U			0.50U		
Bromodichloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
cis-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50U			0.50U		
4-Methyl-2-pentanone	5.0U			5.0U			5.0U			5.0U			5.0U		
Toluene	0.50U			0.50U			0.50U			0.50U			0.50U		
trans-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,1,2-Trichloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Tetrachloroethene	0.50U			1.1			0.50U			0.25L	J	A	9.2		
2-Hexanone	5.0U			5.0U			5.0U			5.0U			5.0U		
Dibromochloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dibromoethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
Ethylbenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
o-Xylene	0.50U			0.50U			0.50U			0.50U			0.50U		
m,p-Xylene	0.50U			0.50U			0.50U			0.50U			0.50U		
Styrene	0.50U			0.50U			0.50U			0.50U			0.50U		
Bromoform	0.50U			0.50U			0.50U			0.50U			0.50U		
Isopropylbenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,1,2,2-Tetrachloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
1,3-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,4-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dibromo-3-chloropropane	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50U	J	C
1,2,4-Trichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2,3-Trichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

CRQL - Contract Required Quantitation Limit

N/A - Not Applicable

NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

Case No. : 37203

SDG No. : Y3WK7

Site : OMEGA CHEM OU2

Lab : MITKEM LABORATORIES

Reviewer : Kendra DeSantolo, ESAT/LDC

Date : 05/09/08

## ANALYTICAL RESULTS

Table 1A

## QUALIFIED DATA

Concentration in ug/L

## Analysis Type :

Trace Level Water Samples  
for Trace Volatiles

Station Location :	59	Sample ID :	Y3WM5	Dilution Factor :	1.0	Collection Date :	3/3/2008	Method Blank	VBLK5T	Method Blank	VBLK5U	Method Blank	VBLK5W	Method Blank	VBLK5X
Trace Volatiles	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Dichlorodifluoromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Vinyl chloride	0.50U			0.50U			0.50U			0.50U			0.50U		
Bromomethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Trichlorofluoromethane	4.1			0.50U			0.50U			0.50U			0.50U		
1,1-Dichloroethene	17	J	E	0.50U			0.50U	J	D	0.50U			0.50U		
1,1,2-Trichloro-1,2,2-trifluoroethane	11			0.50U			0.50U			0.50U			0.50U		
Acetone	5.0U	J	C	5.0U	J	C	5.0U	J	C	5.0U	J	C	5.0U	J	C
Carbon disulfide	0.50U			0.50U			0.50U			0.50U			0.50U		
Methyl acetate	0.50U			0.50U			0.50U			0.50U			0.50U		
Methylene chloride	0.50U			1.1U	J	B	0.50U			0.50U			0.29L	J	A
trans-1,2-Dichloroethene	0.50U			0.50U			0.50U			0.50U			0.50U		
Methyl tert-butyl ether	0.50U			0.50U			0.50U			0.50U			0.50U		
1,1-Dichloroethane	3.9			0.50U			0.50U			0.50U			0.50U		
cis-1,2-Dichloroethene	1.4	J	E	0.50U			0.50U			0.50U			0.50U		
2-Butanone	5.0U	J	C	5.0U	J	C	5.0U			5.0U	J	C	5.0U	J	C
Bromochloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chloroform	0.67U	J	B	0.95			0.50U			0.50U			0.50U		
1,1,1-Trichloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Cyclohexane	0.50U			0.50U			0.50U			0.50U			0.50U		
Carbon tetrachloride	0.50U			0.50U			0.50U			0.50U			0.50U		
Benzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dichloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Trichloroethene	38		H	0.50U			0.50U			0.50U			0.50U		
Methylcyclohexane	0.50U			0.50U			0.50U			0.50U			0.50U		

Case No. : 37203

SDG No. : Y3WK7

Site : OMEGA CHEM OU2

Lab : MITKEM LABORATORIES

Reviewer : Kendra DeSantolo, ESAT/LDC

Date : 05/09/08

## ANALYTICAL RESULTS

Table 1A

## QUALIFIED DATA

Concentration in ug/L

## Analysis Type :

Trace Level Water Samples  
for Trace Volatiles

Station Location :	59	Sample ID :	Y3WM5	Dilution Factor :	1.0	Collection Date :	3/3/2008	Method Blank	VBLK5T	Method Blank	VBLK5U	Method Blank	VBLK5W	Method Blank	VBLK5X
Trace Volatiles	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
1,2-Dichloropropane	0.50U			0.50U			0.50U			0.50U			0.50U		
Bromodichloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
cis-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50U			0.50U		
4-Methyl-2-pentanone	5.0U			5.0U			5.0U			5.0U			5.0U		
Toluene	0.50U			0.50U			0.50U			0.50U			0.50U		
trans-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,1,2-Trichloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Tetrachloroethene	25		H	0.50U			0.50U			0.50U			0.50U		
2-Hexanone	5.0U			5.0U			5.0U			5.0U			5.0U		
Dibromochloromethane	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dibromoethane	0.50U			0.50U			0.50U			0.50U			0.50U		
Chlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
Ethylbenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
o-Xylene	0.50U			0.50U			0.50U			0.50U			0.50U		
m,p-Xylene	0.50U			0.50U			0.50U			0.50U			0.50U		
Styrene	0.50U			0.50U			0.50U			0.50U			0.50U		
Bromoform	0.50U			0.50U			0.50U			0.50U			0.50U		
Isopropylbenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,1,2,2-Tetrachloroethane	0.50U			0.50U			0.50U			0.50U			0.50U		
1,3-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,4-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2-Dibromo-3-chloropropane	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50U	J	C
1,2,4-Trichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		
1,2,3-Trichlorobenzene	0.50U			0.50U			0.50U			0.50U			0.50U		

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

CRQL - Contract Required Quantitation Limit

N/A - Not Applicable

NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

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Case No. : 37203

SDG No. : Y3WK7

## ANALYTICAL RESULTS

Page 10 of 10

Site : OMEGA CHEM OU2  
 Lab : MITKEM LABORATORIES  
 Reviewer : Kendra DeSantolo, ESAT/LDC  
 Date : 05/09/08

Table 1A

QUALIFIED DATA  
Concentration in ug/L

Analysis Type :

Trace Level Water Samples  
for Trace Volatiles

Station Location :	Method Blank			Method Blank			Storage Blank			CRQL								
Sample ID :	VBLKB5			VBLKC5			VHBLKC5											
Collection Date :				1.0			1.0			1.0								
Trace Volatiles	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
1,2-Dichloropropane	0.50U			0.50U			0.50U			0.50								
Bromodichloromethane	0.50U			0.50U			0.50U			0.50								
cis-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50								
4-Methyl-2-pentanone	5.0U			5.0U			5.0U			5.0								
Toluene	0.50U			0.50U			0.50U			0.50								
trans-1,3-Dichloropropene	0.50U			0.50U			0.50U			0.50								
1,1,2-Trichloroethane	0.50U			0.50U			0.50U			0.50								
Tetrachloroethene	0.50U			0.50U			0.50U			0.50								
2-Hexanone	5.0U			5.0U			5.0U			5.0								
Dibromochloromethane	0.50U			0.50U			0.50U			0.50								
1,2-Dibromoethane	0.50U			0.50U			0.50U			0.50								
Chlorobenzene	0.50U			0.50U			0.50U			0.50								
Ethylbenzene	0.50U			0.50U			0.50U			0.50								
o-Xylene	0.50U			0.50U			0.50U			0.50								
m,p-Xylene	0.50U			0.50U			0.50U			0.50								
Styrene	0.50U			0.50U			0.50U			0.50								
Bromoform	0.50U			0.50U			0.50U			0.50								
Isopropylbenzene	0.50U			0.50U			0.50U			0.50								
1,1,2,2-Tetrachloroethane	0.50U			0.50U			0.50U			0.50								
1,3-Dichlorobenzene	0.50U			0.50U			0.50U			0.50								
1,4-Dichlorobenzene	0.50U			0.50U			0.50U			0.50								
1,2-Dichlorobenzene	0.50U			0.50U			0.50U			0.50								
1,2-Dibromo-3-chloropropane	0.50U	J	C	0.50U	J	C	0.50U	J	C	0.50								
1,2,4-Trichlorobenzene	0.50U			0.50U			0.50U			0.50								
1,2,3-Trichlorobenzene	0.50U			0.50U			0.50U			0.50								

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

CRQL - Contract Required Quantitation Limit

N/A - Not Applicable

NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

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**TABLE 1B**  
**DATA QUALIFIER DEFINITIONS FOR ORGANIC DATA REVIEW**

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review," January 2005.

- U     The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
- L     Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
- J     The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
- NJ    The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ    The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
- R     The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Table 2  
Calibration Summary

Case No.: 37203  
 SDG No.: Y3WK7  
 Site: Omega Chem OU2  
 Laboratory: Mitkem Laboratories  
 Reviewer: Kendra DeSantolo, ESAT/LDC  
 Date: May 9, 2008

**RELATIVE RESPONSE FACTORS (RRF)**

	<u>RRF</u>	<u>RRF</u>	<u>RRF</u>	<u>RRF</u>	<u>RRF</u>
Analysis date:	2/29/08	3/05/08	3/05/08	3/06/08	3/06/08
Analysis time:	21:00-	06:20	17:54	05:21	17:09
GC/MS I.D.:	V5	V5	V5	V5	V5
<u>Analyte</u>	<u>Init.</u>	<u>Cont.</u>	<u>Cont.</u>	<u>Cont.</u>	<u>Cont.</u>
Acetone	0.026	0.021	0.021	0.020	0.020
2-Butanone	-----	-----	-----	0.042	0.048
1,2-dibromo-3-chloropropane	0.034	0.034	0.030	0.026	0.038
2-Butanone-d5	-----	-----	-----	0.049	-----
2-Hexanone-d5	0.047	0.048	-----	0.041	-----
	<u>RRF</u>	<u>RRF</u>	<u>RRF</u>	<u>RRF</u>	<u>RRF</u>
Analysis date:	3/07/08	3/07/08	3/10/08	3/10/08	3/11/08
Analysis time:	04:01	15:34	9:53	21:30	08:53
GC/MS I.D.:	V5	V5	V5	V5	V5
<u>Analyte</u>	<u>Cont.</u>	<u>Cont.</u>	<u>Cont.</u>	<u>Cont.</u>	<u>Cont.</u>
Acetone	0.017	0.020	0.029	0.017	0.019
2-Butanone	0.041	0.046	-----	0.036	0.048
1,2-dibromo-3-chloropropane	0.032	0.034	0.038	0.030	0.033
2-Butanone-d5	0.044	-----	-----	0.043	-----
2-Hexanone-d5	0.037	0.046	0.044	0.038	0.045

**PERCENT DIFFERENCES (%D)**

	<u>%D</u>	<u>%D</u>
Analysis date:	3/05/08	3/10/08
Analysis time:	06:20	09:53
GC/MS I.D.:	V5	V5
<u>Analyte</u>	<u>Cont.</u>	<u>Cont.</u>
1,1-Dichloroethene	+38.6	-----
2-Butanone-d5	+36.9	+32.2

## ASSOCIATED SAMPLES AND METHOD BLANKS

Initial 02/29/08: All samples, method blanks, and storage blank VHBLKC5  
Cont., 03/05/08 (06:20): Y3WK7, Y3WK8, Y3WL1 through Y3WL3, Y3WL5, and Y3WL6 and VBLK5T  
Cont., 03/05/08 (17:54): Closing standard for Y3WK7, Y3WK8, Y3WL1 THROUGH Y3WL3, Y3WL5, Y3WL6 and VBLK5T; opening standard for Y3WK7DL, Y3WK8DL, Y3WK9, Y3WL0, Y3WL1DL, Y3WL2DL, Y3WL3DL, Y3WL4, Y3WL5DL, Y3WL6DL, Y3WL7 and VBLK5U  
Cont., 03/06/08 (05:21): Closing standard for Y3WK7DL, Y3WK8DL, Y3WK9, Y3WL0, Y3WL1DL, Y3WL2DL, Y3WL3DL, Y3WL4, Y3WL5DL, Y3WL6DL, Y3WL7 and VBLK5U  
Cont., 03/06/08 (17:09): Y3WL8, Y3WL9, Y3WM0, Y3WM1, Y3WM3, Y3WM3MS, Y3WM3MSD, Y3WM4, Y3WM5, Y3WM6, and VBLK5W  
Cont., 03/07/08 (04:01): Closing standard for Y3WL8, Y3WL9, Y3WM0, Y3WM1, Y3WM3, Y3WM3MS, Y3WM3MSD, Y3WM4, Y3WM5, Y3WM6, and VBLK5W; opening standard for Y3WM2 and VBLK5X  
Cont., 03/07/08 (15:34): Closing standard for Y3WM2 and VBLK5X  
Cont., 03/10/08 (09:53): Y3WM4DL, Y3WM5DL, and VBLKB5  
Cont., 03/10/08 (21:30): Closing standard for Y3WM4DL, Y3WM5DL, and VBLKB5; opening standard for storage blank VHBLKC5 and VBLKC5  
Cont., 03/11/08 (08:53): Closing standard for storage blank VHBLKC5 and VBLKC5.